Radio Editors of magazines and newspapers are hereby given permission to reprint in whole or in part, with proper credit to the Aerovox Corporation, the contents of this issue of the Aerovox Research Worker.

the AEROVOX Research Worker

The Aerovox Research Worker is a monthly house organ of the Aerovox Corporation. It is published to bring to the Radio Experimenter and Engineer authoritative, first hand information on condensers and resistances for radio work.

VOL. 15, NO. 8 AUGUST, 1943

50c per year in U.S.A.
60c per year in Canada

H. F. Frequency Measurements

PART V

BIBLIOGRAPHY

By the Engineering Department, Aerovox Corporation

1. General Theory

U.H.F. Measurements

Radio Amateur's Handbook; 19th Ed. pp. 80-82, 348-351, 370

Measurements in the Ultra-High-Frequency Spectrum. R. F. Lewis. *Electronics.* April 1942, p. 63

Measurements of Very Short Wavelengths. *Electronics.* Dec. 1942, p. 108

Exploring the Microwaves. *Electronics.* May 1939, p. 35

Natural Oscillations of Electrical Cavity Resonators. W. L. Barrow and W. W. Mieher. *Proc. I.R.E.* April 1940, p. 184

Developments in U. H. F. Oscillators. J. J. Lamb. *QST,* July 1931, p. 9

Barkhausen and Kurz. *Zeitschrift für Physik.* Vol. 21 (1921), No. 1

Gill and Morrell. *Philosophical Magazine.* Vol. 44 (1922) p. 161 and Vol. 49 (1925) p. 369

Electron Oscillations. E. Karplus. *General Radio Experimenter.* May 1931

Ultra-High-Frequency Techniques. Brainerd, Koehler, Reich, and Woodruff (Van Nostrand) pp. 295-342 and 508-517

Vacuum Tubes as High-Frequency Oscillators. M. J. Kelly and A. L. Samuel. *Bell System Tech. Journal.* Jan. 1935, p. 97

Vacuum Tubes as High-Frequency Oscillators. E. D. McArthur and E. E. Spitzer. *Proc. I.R.E.* Nov. 1931, p. 1971

The Operation of Electron Tubes at High Frequencies. H. Rothe. *Proc. I.R.E.* July 1940, p. 325

The Characteristics of Negative-Resistance Magnetrons. Hsu Chang and E. L. Chaffee. *Proc. I.R.E.* Nov. 1940, p. 519

On a Double-Hump Phenomenon of Current Through a Bridge across Parallel Lines. Eijiro Takagishi. *Proc. I.R.E.* March 1930, p. 513

Measurement of the Frequency of Ultra-Radio Waves. J. B. Hoag. *Proc. I.R.E.* Jan. 1933, p. 29

An Ultra-High-Frequency Measuring Assembly. Samuel Sabaroff. *Proc. I.R.E.* March 1939, p. 208

Traveling Waves in Electron Beams. Ramo. *Communications.* November 1940, p. 5

Electric Resonance Chambers. Grote Reber. *Communications.* Dec. 1938, p. 5

Wave Energy and Transconductance of Velocity-Modulated Electron Beams. Hahn. *Gen. Electric Review.* Nov. 1939, p. 497

The Generation of "Centimetre" Waves. F. W. Chapman. *Wireless Engineer.* Sept. 1932, p. 500

AEROVOX PRODUCTS ARE BUILT BETTER

Printed in U. S. A.

Copyright 1943 by Aerovox Corporation

2. Methods

U.H.F. Measurements

Radio Amateur's Handbook. pp. 80-82, 370, 19th Edition

Radio Handbook (Editors & Engineers Ltd.) p. 407, Ninth Edition

Measurements in the U. H. F. Spectrum. R. F. Lewis. *Electronics* April 1942, p. 63

Measurements of Very Short Wavelengths. *Electronics.* Dec. 1942, p. 108

Inductive Tuning at Ultra-High-Frequencies. *Electronics. April* 1941, p. 32

Exploring the Microwaves. *Electronics.* May 1939, p. 35

Vacuum Tubes as High-Frequency Oscillators. M. J. Kelly and A. L. Samuel. *Bell System Tech. Journ.* Jan. 1935, p. 97

Ultra-High-Frequency Techniques. Brainerd, Koehler, Reich, and Woodruff. (Van Nostrand) pp. 295-342 and 508-517

On a Double-Hump Phenomenon of Current through a Bridge across Parallel Lines. Eijiro Takagishi. *Proc. I.R.E.* March 1930, p. 513

Measurement of the Frequency of Ultra-Radio Waves. J. B. Hoag. *Proc. I.R.E.* Jan. 1933, p. 29

Radio-Frequency Measurements. Hartshorn. (Wiley) pp. 233-247

Exploring Below One Meter. Tynes and Babcock. *QST.* May 1939, p. 16

Working at One Meter and Below. Ross A. Hull. *QST.* Sept. 1936, p. 22

An Ultra-High-Frequency Measuring Assembly. Samuel Sabaroff. *Proc. I.R.E.* March 1939, p. 208

Frequency Measurement at Ultra-High Frequencies. Hayes. *Radio.* Dec. 1939, p. 35

Field Strength Measuring Equipment for Wide-Band U. H. F. Transmission. George. *RCA Review.* April 1939, p. 431

Electrical Measurements at Wavelengths Less Than Two Meters. L. S. Nergaard. *Proc. I.R.E.* Sept. 1936, p. 1209

The Generation of "Centimetre" Waves. F. W. Chapman. *Wireless Engineer.* Sept. 1932, p. 500

3. Oscillators, Generators, etc.

A Visual Alignment Generator. H. F. Mayer. *Electronics Engineering Manual.* (Rev. Ed.), p. 227

A 60 to 100 Megacycle Oscillator. A. Binneweg, Jr. *Electronics Engineering Manual.* p. 159

20-100 Mc. Signal Generator. C. J. Franks. *Electronics Engineering Manual.* p. 222

Radio Amateur's Handbook. pp. 122-123

Spherical Tank U. H. F. Oscillator. H. E. Hollman. *Electronics.* Dec. 1938, p. 26

Generators for Ultra-High Frequency. Mouromtseff, Retherford, and Finley. *Electronics.* April 1942, p. 45

Natural Oscillations of Electrical Cavity Resonators. W. L. Barrow and W. W. Mieher. *Proc. I.R.E.* April 1940, p 184

Developments in U. H. F. Oscillators. J. J. Lamb. *QST.* July 1931, p. 9

Barkhausen and Kurz. *Zeitschrift für Physik.* Vol. 21 (1920), No. 1

Gill and Morrell. *Philosophical Magazine.* Vol. 44 (1922), p. 161 and Vol. 49 (1925), p. 369

Radio Engineering Handbook. Henney. (McGraw-Hill). pp. 309-315, Third Edition

Vacuum Tubes as High-Frequency Oscillators. M. J. Kelly and A. L. Samuel. *Bell System Tech. Journ.* Jan. 1935, p. 97

The Characteristics of Negative-Resistance Magnetrons. Hsu Chang and E. L. Chaffee. *Proc. I.R.E.* Nov. 1940, p. 519

Electron Beam Magnetrons. Kinjiro Okabe. *Proc. I.R.E.* Jan. 1939, p. 24

Practical Microwave Oscillators. Reed. *QST.* June 1942, p. 14

Exploring Below One Meter. Tynes and Babcock. *QST.* May 1939, p. 16

Working at One Meter and Below. Ross A. Hull. *QST.* Sept. 1936, p. 22

Rationalizing the Resonant-Line U. H. F. Oscillator. Friend. *QST.* Nov. 1935, p. 26

An Ultra-High-Frequency Measuring Assembly. Samuel Sabaroff. *Proc. I.R.E.* March 1939, p. 208

Electric Resonance Chambers. Grote Reber. *Communications.* Dec. 1938, p. 5

High-Frequency Triode Oscillators. Grote Reber. *Communications.* Mar. 1938, p. 13

An Ultra-High-Frequency Oscillator. Peterson. *Communications.* Dec. 1937, p. 26

An Experimental Study of Regenerative Ultra-Short-Wave Oscillators. Wenstrom. *Proc. I.R.E.* Jan. 1932, pp. 113-130

Coaxial Cable Attenuation Measurements at 300 Megacycles. Race and Larrick. *Gen. Electric Review.* Sept. 1941, p. 507

An Oscillator for Ultra-High Frequencies. W. L. Barrow. *Review of Scientific Instruments.* June 1938, p. 170

A Variable Oscillator for Ultra-High-Frequency Measurement. Ronold King. *Review of Scientific Instruments.* November 1939, p. 325

The Generation of "Centimetre" Waves. F. W. Chapman. *Wireless Engineer.* Sept. 1932, p. 500

The Type 757-A Ultra-High-Frequency Oscillator (150 to 600 Megacycles). Arnold Peterson. *General Radio Experimenter.* Aug. 1941, p. 4

An Ultra-High-Frequency Oscillator. Arnold Peterson. *General Radio Experimenter.* Oct. 1937, p. 4

An Improved Ultra-High-Frequency Signal Generator. Myron T. Smith. *General Radio Experimenter.* Feb. 1941

30-Mc. Crystal Oscillator. *Frequency Control with Quartz Crystals.* (Engineering Bulletin E-6, Bliley Electric Co.), p. 18

4. Monitors, etc.

Radio Engineering Handbook. Henney. (McGraw-Hill), pp. 559-560, Third Edition

400-Megacycle Receiver. Reed. *Radio.* March 1941, p. 27

Field Strength Measuring Equipment for Wide-Band U.H.F. Transmission. George. *RCA Review.* April 1939, p. 431

5. Wavemeters, Frequency Meters, and Lines

A Wavemeter for Decimeter Waves. *Electronics Engineering Manual.* p. 160

Sensitive Frequency Meter for the 30 to 340 Mc. Range. E. L. Hall. *Electronics.* May 1941, p. 37

Radio Handbook. Moyer and Wostrel. (McGraw-Hill), p. 174

Measurements in Radio Engineering. Terman. (McGraw-Hill), 1st Ed., p. 128

On a Double-Hump Phenomenon of Current through a Bridge across Parallel Lines. Eijiro Takagishi. *Proc. I.R.E.* March 1930, p. 513

Rationalizing the Resonant-Line U. H. F. Oscillator. Friend. *QST.* Nov. 1935, p. 26

Resonant Lines as Circuit Elements. *Radio.* March 1938, p. 57

Wide Range U. H. F. Wavemeter. Rehm. *Radio.* April 1941, p. 30

Transmission Lines as Circuit Elements. E. H. Conklin. *Radio.* April 1939, p. 43, May 1939, p. 43, and June 1939, p. 33

A Ten-Centimeter Wavemeter. S. D. Lavoie. *Communications.* Jan. 1941, p. 9

Direct-Reading Wavemeter for Ultra-High Frequencies. E. Karplus. *General Radio Experimenter.* Aug. 1940

6. Tubes

Cathode Rays for the U. H. F. Lester L. Libby. *Electronics Engineering Manual* (Rev. Ed.), p. 227

Electron Oscillations in a Triode. Hollman. *Proc. I.R.E.* Feb. 1929

Vacuum Tubes as High-Frequency Oscillators. M. J. Kelly and A. L. Samuel. *Bell System Tech. Journ.* Jan. 1935, p. 97

Vacuum Tubes as High-Frequency Oscillators. E. D. McArthur and E. E. Spitzer. *Proc. I.R.E.* Nov. 1931, p. 1971

The Operation of Electron Tubes at High Frequencies. H. Rothe. *Proc. I.R.E.* July 1940, p. 325

The Characteristics of Negative-Resistance Magnetrons. Hsu Chang and E. L. Chaffee. *Proc. I.R.E.* Nov. 1940, p. 519

Velocity-Modulated Tubes. W. C. Hahn and G. E. Metcalf. *Proc. I.R.E.* Feb. 1939, p. 106

Electron-Beam Magnetrons. Kinjiro Okabe. *Proc. I.R.E.* Jan. 1939, p. 24

Traveling Waves in Electron Beams. Ramo. *Communications.* Nov. 1940, p. 5

Vacuum Tubes as High-Frequency Oscillators. Kelly and Samuel. *Proc. I.R.E.* Nov. 1934, p. 1504

Wave Energy and Transconductance of Velocity-Modulated Electron Beams. Hahn. *Gen. Electric Review.* Nov. 1939, p. 497

7. Miscellaneous

A V. T. Voltmeter for Coaxial Line Measurements. G. L. Usselman. *Electronics Engineering Manual.* (Rev. Ed.), p. 227

Cathode Rays for the U. H. F. Lester L. Libby. *Electronics Engineering Manual.* p. 114

Cathode Ray Form Distortion at Ultra-High Frequencies. R. M. Bowie. *Electronics.* Feb. 1938, p. 18

Inductive Tuning at Ultra-High Frequencies. *Electronics.* April 1941, p. 32

On a Double-Hump Phenomenon of Current through a Bridge across Parallel Lines. Eijiro Takagishi. *Proc. I.R.E.* Mar. 1930, p. 513

Exploring Below One Meter. Tynes and Babcock. *QST.* May 1939, p. 16

Working at One Meter and Below. Ross A. Hull. *QST.* Sept. 1936, p. 22

An Ultra-High-Frequency Measuring Assembly. Samuel Sabaroff. *Proc. I.R.E.* Mar. 1939, p. 208

Frequency Measurement at Ultra-High Frequencies. Hayes. *Radio.* Dec. 1939, p. 35

Electric Resonance Chambers. Grote Reber. *Communications.* Dec. 1938, p. 5

Traveling Waves in Electron Beams. Ramo. *Communications.* Nov. 1940, p. 5

Field Strength Measuring Equipment for Wide-Band U. H. F. Transmission. George. *RCA Review.* April 1939, p. 431

Coaxial Cable Attenuation Measurements at 300 Megacycles. Race and Larrick. *Gen. Electric Review.* Sept. 1941, p. 507

The Type 757-A Ultra-High-Frequency Oscillator (150 to 600 Megacycles). Arnold Peterson. *Gen. Radio Experimenter.* Aug. 1941, p. 4

An Ultra-High-Frequency Oscillator. Arnold Peterson. *Gen. Radio Experimenter.* Oct. 1937, p. 4

An Improved Ultra-High-Frequency Signal Generator. Myron T. Smith. *Gen. Radio Experimenter.* Feb. 1941

A New Condenser for High-Frequency Circuits. *Gen. Radio Experimenter.* Aug. 1939

Stepping up to TEN MILLION VOLTS

X-Ray and Impulse Generator Capacitors

AEROVOX TYPE '26

Applications:

X-ray filter capacitors
Impulse test generators
Carrier-current coupling capacitors
High-voltage laboratory equipment
Many other high-voltage applications

Ratings:

50,000 v. D.C. — .005 to .1 mfd.
75,000 v. D.C. — .001 to .05 mfd.
100,000 v. D.C. — .001 to .05 mfd.
150,000 v. D.C. — .001 to .03 mfd.

● Charged in parallel, discharged in series, these capacitors provide for voltages up to ten million and over for certain deep-penetration X-ray and impulse generator applications. For usual X-ray work, single units operate up to 150,000 volts.

Aerovox Type '26 capacitors are designed for just such service. Multi-layer paper sections, oil-impregnated, oil-filled, housed in sturdy tubular bakelite cases. Choice of metal cap terminals facilitates stack mounting and connections. Sections of matched capacitance insuring uniform voltage gradient throughout length of capacitor.

Behind these capacitors stand those giant Aerovox winding machines handling dozens of "papers" at a time for highest-voltage paper sections. Likewise batteries of Aerovox vacuum tanks insuring thorough impregnation even to the last paper fibre. Such facilities spell Aerovox—the last word in oil capacitors—safeguarded by thorough inspection and testing from raw materials to finished units.

● New catalog, listing an outstanding line of heavy-duty capacitors for radio, electronic and industrial functions, sent on request to individuals engaged actively in professional engineering or production. Submit your capacitance problems and requirements.

AEROVOX *Capacitors*

INDIVIDUALLY TESTED

AEROVOX CORPORATION, NEW BEDFORD, MASS., U. S. A. • SALES OFFICES IN ALL PRINCIPAL CITIES

Export: 13 E. 40 ST., NEW YORK 16, N. Y. • Cable: 'ARLAB' • In Canada: AEROVOX CANADA LTD., HAMILTON, ONT.